slightest alteration in the conditions of life will cause extinction.[1]

If selection tends to diminish the variability of a species, then it clearly follows that as selection has been by hypothesis the most important means of modifying organisms, variation must have been much greater in past times than it is now. In fact, it must have been progressively greater the farther we go back from the present time.

The argument which I have just laid before you points, if carried to its logical conclusion—and I see no reason why it should not be so carried—to the view that at the first origin of life upon the earth the variability of living matter consequent upon the act of conjugation must have been of enormous range: in other words, it points to the view that heredity was a much less important phenomenon than it is at present. Following out the same train of thought, we are inevitably driven to the conclusion that one of the most important results of the evolutionary change has been the gradual increase and perfection of heredity as a function of organisms and a gradual elimination of variability.

This view, if it can be established, is of the utmost importance to our theoretical conception of evolution, because it enables us to bring our requirements as to time within the limits granted by the physicists. If variation was markedly greater in the early periods of the existence of living matter, it is clear that it would have been possible for evolutionary change to have been effected much more rapidly than at present—especially when we remember that the world was then comparatively unoccupied by organisms, and that with the change of conditions consequent on the cooling and differentiation of the earth's surface, new places suitable for organic life were continually being formed. It will be observed that the conclusion we have now reached, viz. that variation was much greater near the dawn of life than it is now, and heredity a correspondingly less important phenomenon, is a deduction from the selection theory. It becomes, therefore, of some interest to inquire whether a suggestion obtained by a perfectly legitimate mode of reasoning receives any independent confirmation from other sources. The first source of facts to which we turn for such confirmation must obviously be palæontology. But palæontology unfortunately affords us no help. The facts of this science are too meagre to be of any use. Indeed, they are wanting altogether for the period which most immediately concerns us—namely, the period when the existing forms of life were established. This took place in the prefossiliferous period, for in the earliest fossiliferous rocks examples of almost all existing groups of animals are met with.

But although palæontology affords us no assistance, there is one class of facts which, when closely scrutinised, do lend some countenance to the view that when evolutionary change was at its greatest activity, *i.e.* when the existing forms of life were being established, variation was considerably greater than it is at the present day.

But as this address has already exceeded all reasonable limits, and as the question which we are now approaching is one of very great complexity and difficulty, I am reluctantly compelled to defer the full consideration and treatment of it to another occasion. I can only hope that the far-reaching importance of my subject and the interest of it may to some extent atone for the great length which this address has attained.

APPENDIX.

The following observations on the condition of the male reproductive organs in highly variable plants are quoted from Darwin's "Variation of Animals and Plants under Domestication," vol. ii. p. 256 *et seq.*

In certain plant hybrids which are highly variable, it is known that the anthers contain many irregular pollen-grains. Exactly the same fact has been noticed by Max Wichura in many of our highly cultivated plants which are extremely variable, and which there is no reason to believe have been hybridised, such as the hyacinth, tulip, snapdragon, potato, cauliflower, &c.

The same observer also "finds in certain wild forms the same coincidence between the state of the pollen and a high degree of variability, as in many species of *Rubus*; but in *R. caesius* and *idaeus*, which are not highly variable species, the pollen is sound." A little further on Darwin says "these facts indicate that there is some relation between the state of the reproductive organs and a tendency to variability; but we must not conclude that the relation is strict." Finally he sums up the matter in these words: "On the whole it is probable that any cause affecting the organs of reproduction would likewise affect their product—that is, the offspring thus generated."

NOTES.

IN his address to the French Association, at the recent Boulogne meeting, Dr. P. Brouardel took as his theme "Hygiene and its Progress during the last 100 Years." He paid special homage to the memory of the great Englishman and Frenchman, Jenner and Pasteur, who had done so much for the promotion of medical science. The first operation in vaccination made in France was performed at Boulogne, June 18, 1800. A public monument—a statue of Jenner—records the event. Referring to some preventive diseases, Dr. Brouardel remarked that in the French army the mortality from typhoid fever is now about 12 in 10,000, and in the present state of the water supply of many towns it is believed that this mortality will not be much reduced. In the German army, however, the mortality from typhoid fever is as low as 1 and 2 per 10,000, owing doubtless to the fact that an order of a Government authority addressed to any municipal body is immediately carried out, so that an impure water supply has soon to be replaced by a better one. But though some French municipalities are indifferent to their responsibilities, others do their duty well, and the mortality from typhoid fever for the whole of France is only 3 per 10,000. Dr. Brouardel referred to several other subjects which came within the range of preventive medicine.

THE application of the Jenner Institute of Preventive Medicine for permission to alter the memorandum of association so as to enable the institute to avail itself of Lord Iveagh's gift of 250,000*l.* was granted by Mr. Justice Cozens Hardy on September 13.

AFTER four months' work on his yacht, Dr. H. C. Sorby, F.R.S., has returned to Sheffield with many hundred specimens of marine animals, preserved by his new methods, so as to show lifelike character and natural colour.

THE Director of the Marine Observatory of San Fernando announces that the Spanish Minister of Finance has given instructions that all instruments intended for observations of the eclipse of the sun on May 27, 1900, are to be admitted free of duty.

SIR WILLIAM PREECE, K.C.B., has recently been making experiments with an electromagnetic system of wireless telegraphy in the Menai Straits. Using a telephone as a receiver, he has succeeded in establishing communication between stations half a mile apart, the messages heard being signals on the Morse code.

WE learn from the *Scientific American* that Prof. J. B. Hatcher, of Princeton University, has just returned from his geological expedition to Patagonia. The primary object of Prof. Hatcher's expedition was to make the most extensive collections possible of fossils of Patagonia. He also devoted considerable attention to gathering ethnological, botanical and zoological specimens. The first Mesozoic mammals ever discovered were found in Patagonia on this expedition, and upward of thirty cases of Mesozoic vertebrates were shipped north. Naturally Prof. Hatcher gathered much valuable material illustrating the life and customs of the Patagonian Indian tribes, and he has obtained an important series of photographic negatives which depict the geological and physiographic features of that region.

---

[1] The expression extinction of species seems to be used in two senses which are generally confused. Firstly, a species may become modified so that the form with which we are familiar gradually gives place to one or more forms which have been gradually produced by its modification. That is to say, a character or series of characters becomes gradually modified or lost in successive generations. This is not really extinction, but development. Secondly, a species may gradually lose its variability, and become fixed in character. If the conditions then change, it is unable to adapt itself to them, and becomes truly extinct. In this case it leaves no descendants. We have to do with death, and not with development.

THE *British Central Africa Gazette* (July 24), published at Zomba, announces the arrival at Nyasa of Mr. J. E. S. Moore, who visited Lakes Shirwa, Nyasa, and Tanganyika in 1896 under the auspices of the Royal Society, and has again returned to Central Africa to survey the basin of Lake Tanganyika, to collect specimens of the aquatic fauna and flora, and to study the geological history of this portion of the great Central African rift. Mr. Moore has with him a complete set of apparatus for deep-water dredging, and the results of the present expedition should be even more satisfactory and interesting than those of the previous investigation. On the way to Tanganyika, deep sounding and dredging operations will be made in Lake Nyasa, the Administration gunboat *Guendolen* having been placed at the disposal of the expedition for this purpose. It is intended to spend several months on Lake Tanganyika, and, after leaving the north end of that lake, to proceed to Lakes Kivu, Albert Edward, and Albert, whence it is proposed to make for the East African coast.

WE regret to see the announcement of the death of M. Gaston Tissandier, the founder of our Parisian namesake, *La Nature*, and the author of a number of scientific works. For many years M. Tissandier devoted much attention to ballooning, and made many balloon ascents, during which he obtained information of value to aëronautics and meteorology. The results of his investigations will be found in the *Comptes rendus* of the Paris Academy of Sciences. He was nominated president of the French Association of aërial navigation, and in 1876 received from the Association the Janssen gold medal. His first memoir on the application of electricity to aërial navigation was crowned by the Paris Academy of Sciences. In 1886, M. Tissandier was made a member of the committee on aëronautics by the Minister of War, and also of the civil committee on the same subject by the Minister of the Interior. He was a member of many scientific societies in France, and a vice-president of the French Meteorological Society. He was made a Chevalier of the Legion of Honour in 1872, and in 1893 the Society for the Encouragement of National Industry awarded him the grand gold medal. In addition to his scientific papers, M. Tissandier was the author of several volumes on physics, chemistry, photography, and ballooning.

MR. C. E. STROMEYER has sent us a stereoscopic photograph of what appears to him to have been an induced lightning flash, taken by Mr. S. Jewsbury at Didsbury. The camera by which the photograph was obtained was placed upon the sill of an open window during a thunderstorm, in order to depict any flashes of lightning which might come within its field of view. No flashes were seen in this part of the sky, but when the plate was developed a broken streak of light appeared upon the two pictures. The trail is horizontal and directed towards a lamp-post in a neighbouring road. As similar markings are often found on plates when lighted lamps are in the field, their electrical origin in the present case is difficult to establish; for they may have been produced while the camera was being placed in position, or taken away, with the lens off. Nevertheless the photograph furnishes interesting material for speculation.

MR. T. KINGSMILL sends us two cuttings from the *Shanghai Mercury* referring to two electric displays of an unusual character observed at Shanghai on July 19 and August 10. On the former occasion it is stated:—"The northern sky was in an almost constant blaze of light. Flashes came sometimes from two centres, as though there were an elliptical area of disturbance from whose foci were sent forth the shafts of lightning. At times these flashes would take the opposite course, and starting from the circumference make their way to the foci. Though the lightning flashes reached within twenty-five degrees of the zenith, and were vigorous enough in all conscience, yet nothing but the faintest distant rumbling could be heard." On August 10 "the reflection of lightning was seen from the S.W. and gradually increased in brightness until at about 7.50 it had reached the zenith." The report states that "the lightning played over nearly the whole of the exposed sky, sometimes six and seven streamers at a time lighting up the sky. They were different in appearance from ordinary forked lightning, having rather the appearance of a network of ribbons crossing the exposed sky in all directions, like the discharges in a vacuum tube. The most unusual circumstance was that these discharges, though most vivid, were almost noiseless, and could scarcely be heard above the ordinary jinrickshaw traffic of the street, the only accompanying sound to the brightest display even in the zenith being a low rumbling, as of ordinary very distant thunder." Mr. Kingsmill remarks that both displays were synchronous with distant typhoons.

AT a meeting of the Lincolnshire Naturalists' Union and the Lincolnshire Science Society, on September 11, Dr. G. M. Lowe, the president of both Societies, expressed the hope that something would soon be done to give science—both natural and physical—in Lincolnshire, first, a permanent home, secondly, the means of making useful observations, and thirdly, of recording them. The first requires the establishment of a museum, which would at once be a memorial of the great men who had been born and lived in Lincolnshire, amongst whom may be mentioned Isaac Newton, Sir John Franklin, and Mr. John Cordeaux. As a repository of specimens of the fast disappearing fauna and flora of our former fen country, of specimens of local antiquarian interest, of specimens bearing on the technique of our local arts and manufactures, a museum worthy of Lincolnshire would soon become invaluable. Next month the county authorities will consider an application for space within the Old Keep of the Castle, to erect buildings for an observatory for the reception of astronomical instruments offered to the county, and for a meteorological station. A third requirement is a means of recording and preserving the observations and papers of members of the scientific societies in the county. A magazine devoted to natural and physical science could, Dr. Lowe felt sure, be supported by Lincolnshire alone; and if the writers of observations and of papers on scientific subjects could be persuaded to drop the pedantic, and use as far as possible a simple phraseology, a highly interesting and useful publication could be provided, which would have a stimulating effect in directing the scientific education of the younger generation.

WE have received from Prof. A. Klossovsky a copy of a paper read before the congress of naturalists, &c., at Kieff, entitled, "The Physical Life of our Planet." The author treats the subject on the supposition that the earth is similar to a living organism, in which the various functions and elements are closely connected according to certain laws. He considers that even the variations of terrestrial magnetism depend upon a system of currents which traverse the atmosphere and are in evident correlation with the cyclonic activity of the air, and, further, that the magnetic and electric fields have an influence on the progress of phenomena at the surface of the earth. He gives some interesting accounts of the most recent acquisitions of science in the determination of the different forces which constitute the physics of the globe.

THE U.S. Hydrographic Office has received a sufficient number of reports to enable it to lay down, with substantial accuracy, the track of the destructive West India hurricane referred to in our issue of August 17 (p. 374). It appears to have been first encountered on August 3, in lat. 11° 51′ N., long. 35° 42′ W., further east than any tropical storm hitherto reported to that Office. At noon (Greenwich time) on the 7th, observations of barometers and winds between St. Kitts and Barbados showed unmistakably the presence of a hurricane to the eastward. The centre of the storm reached Porto Rico on the 8th, Haiti on the 9th, Bahamas on the 12th, and Jupiter, on the Florida coast, on the 13th, and then continued its path parallel to the general trend of the U.S. coast, where vessels continued to report gales of hurricane force until the 19th. The lowest barometer reading, 28·35 inches, appears to have occurred off the Florida coast on August 14. When the hurricane was last reported, in the afternoon of the 21st, it was near lat. 40° N. and long. 60° W., much weakened in energy. The life of the storm is longer than any hitherto reported to the Hydrographic Office.

THE thirty-sixth annual report of the Government Cinchona Plantation in Sikkim, by Surgeon-Major D. Prain, shows that the issues of quinine during the year 1897–98 amounted to 10,939 lbs., as against 8482 lbs. in 1896–97. The medical depôts required 1710 lbs. more than during the preceding year, and the sales to Government officers for distribution in their districts exceeded those of 1896–97 by 1086 lbs. As Sir George King feared, there has been a very marked decline in the demand for quinine for division into pice-packets for sale at Post-offices. The falling off in the demand, so far as Bengal is concerned, may be due to some special cause not active elsewhere; at all events, 800 lbs. have been asked for and supplied during the year for conversion into pice-packets in the North-western Provinces.

DURING the year 1898–99 covered by the report of the Royal Botanic Garden, Calcutta, especial attention was given to the cultivation and distribution of plants of economic value. In connection with the question of rubber and gutta-percha, it has been ascertained, after examination of the milky juice of species of Sideroxylon belonging to the natural family Sapotaceæ, that, though these species do not yield a true rubber, the material obtained from them might prove capable of being utilised for the various purposes for which gutta-percha or india-rubber is now employed. An interesting introduction to India during the year was *Polygala butyracea*, an African species, which yields an excellent vegetable oil. The cultivation and the identification of living plants yielding Indian products of hitherto doubtful origin were continued during the year with good results.

WE have received two papers on earthquakes registered at the observatory of Catania during the present year (*Boll. dell' Accad. Gioenia di Sci. Nat. in Catania*, 1899). Prof. Riccò describes the records of an earthquake in the Peloponnesus on January 22 made by the great seismometrograph, which is 25·3 m. long and has a mass of 300 kg., and by the Brassart seismometrograph. Mr. Arcidiacono gives an account of three diagrams obtained by the former instrument between 7 and 10 p.m. (G.M.T.) on May 3, the first being evidently made by a distant earthquake, which proved to be a strong shock in the Peloponnesus; and the other two by local shocks originating below the south-west flank of Etna at the same spot as the destructive earthquake of May 14, 1898. The author suggests that the Sicilian focus was in a critical condition, and that the two movements there were precipitated by the earlier disturbance in Greece.

THE Free Museum of Science and Art of the University of Pennsylvania issues an illustrated *Bulletin*, in the last number of which (vol. ii. No. 2) an account is given of the new museum buildings in which will be lodged the fine collections of Drs. W. H. Furness and H. M. Hiller and Mr. A. C. Harrison, jun., from Borneo and adjacent islands; the collection from Sarawak is second only to that in the Sarawak Museum at Kuching, and in some respects probably surpasses it. The *Bulletin* contains a report on the recent excavations of the University at Nippur, an account of the Rittenhouse Orrery, and a catalogue of the recent additions to the Museum, some of the more interesting specimens being figured.

THE Dorset County Council has set a good example in arranging for a series of reports with analyses of the soils of the county. The work has been carried out in Reading College under the superintendence of Mr. Douglas A. Gilchrist, and the soils have been analysed by Mr. C. M. Luxmoore and Mr. A. M. Ryley. The first annual report has just reached us; it forms Supplement No. viii. to the *Journal* of Reading College, August 1899. Soils have been taken from areas where different geological formations are developed from the Lower Lias of the Vale of Marshwood to the Reading Beds near Wimborne; a few analyses are also given of soils from Berkshire, Hampshire, and Oxfordshire. The results so far obtained are full of interest, and are likely to prove of great practical importance. Suggestions are made for the manuring of the principal farm crops on the different classes of soils, as well as on the suitability of the soils for particular crops.

AN excellent "Sketch of the Geology of the Lower Carboniferous Rocks of Derbyshire" has been contributed by Mr. H. H. Arnold Bemrose to the August number of the *Proceedings* of the Geologists' Association. The Mountain Limestone with its caverns and lead mines, the Yoredale Rocks and the Millstone Grit are duly described, and the leading fossils are noted. Mention is made of Dr. Wheelton Hind's opinion that the Yoredale Rocks of Derbyshire are newer than those of the typical district in Wensleydale. Further research on this subject is needed. References are made to the Glacial Drift, the Pleistocene Mammalia, the Warm Springs, and other subjects. A more particular account is given of the igneous rocks generally known as Toadstones, and of the occurrence of volcanic vents, as well as tuffs, lavas and sills. There are notes also on marmorised, dolomitised and silicified limestones. The article is well illustrated with maps, sections, and pictorial views.

MANY persons are under the impression that shore-nesting birds make no nest, but lay their eggs indiscriminately among the shingle. This Mr. Patten, in the September number of the *Irish Naturalist*, shows to be a complete misconception so far as the Little Tern is concerned. As a matter of fact, the bird excavates a conical pit in the sand about two inches deep. Immediately round the "crater" a narrow zone of sand is cleared from shingle; and when completed and containing its full clutch of two or three eggs, the deepest part of the nest is filled with broken shells, into which the eggs are wedged with their points downwards. As the eggs are disproportionately large in relation to the bird, it is manifest that the position in which they are placed renders them most easily covered by the brooding hen. It has been assumed that the "crater" is excavated by the hen-bird "breasting" the sand in the manner that sparrows dust themselves by the road-side, but the author is of opinion that the work is done with the beak.

THE discussion in regard to the Ground-sloth whose skin and other remains have been found in a cave in Patagonia has assumed a new phase. It will be remembered that in a recent contribution to our columns Dr. Moreno stated his belief that the animal belonged to the genus *Glossotherium* (= *Grypotherium*), the creation of a new genus (*Neomylodon*) for its reception being accordingly superfluous. Accepting this determination, but using the synonym *Grypotherium*, Dr. R. Hauthal, in a paper recently communicated to the "Revista del Museo de la Plata" (vol. ix, p. 409), comes to the conclusion that the animal in question was kept by the prehistoric Indians of Patagonia in a domesticated state, and that the cave at Ultima Esperanza was the stable where the herd was nightly collected! Several specimens of the hide, as well as abundant droppings in a dried state, have been obtained; but in spite of this, the author is of opinion that all the remains date from prehistoric times. And he gives reasons for the belief that the creature cannot be living at the present day. Considering the animal in question to be distinct from the typical species, the author and his colleague Mr. Roth bestow the new title *G. domesticum*, apparently oblivious of Dr. Ameghino's earlier name *listai*. The promised continuation of this remarkable paper will be awaited with interest.

SOME very interesting features in development are brought to light in Mr. J. S. Budgett's "Notes on Batrachians of the Paraguayan Chaco," published in the last issue of the *Quarterly Journal of Microscopical Science*. It is well known that in some of the arboreal frogs the tadpole stage, to meet the necessities of existence, is more or less abbreviated; and the author describes an instance of this in a species of *Phyllomedusa*, illustrating his notes with a beautiful coloured plate. After mentioning how the male and female hold together the edges of a leaf (which afterwards become united by the jelly of the egg-mass) during oviposition so as to form a funnel for the reception of the eggs, the developmental stages are described in detail. In the short period of six days the embryo leaves the egg as a pellucid tadpole of a bright green colour, whose only conspicuous parts are its eyes. The tadpole, which may have to travel several inches in order to reach the water, is hatched without a trace of yolk, and with the loss of external gills; breathing taking place by means of a median spiracle, and the lungs being distinctly visible through the body-wall. Pigment is locally developed next day; and at the end of about five weeks the hind limbs appear. When both pairs of limbs are developed, the young frog lands, and sits quietly among the grass till its tail is completely absorbed, when it is practically adult.

THE second volume of Prof. G. O. Sars' work on the Crustacea of Norway, dealing with the Isopoda, has just been completed. The volume is the first in which the Scandinavian Isopoda are treated as a whole, and it should be of much practical use to zoologists. The third volume of the work, now in preparation, will treat of the anomalous group Cumacea, and will consist of about 150 pages with sixty plates.

AT the Royal Victoria Hall, Waterloo Bridge Road, the following popular science lectures will be delivered on Tuesday evenings during October:—October 3, "The Value of Nitrogen," Prof. Holland Crompton, F.R.S. October 10, "Liquid Air," Prof. W. Ramsay, F.R.S. October 17, "Source and Course of the River Thames," Dr. C. G. Cullis. October 24, "Photographs taken in the Dark," Dr. Russell, F.R.S. October 31, "Kamchatka," Captain Barrett Hamilton.

THE additions to the Zoological Society's Gardens during the past week include a Maholi Galago (*Galago maholi*) from South Africa, presented by Mr. James W. Park; two Black-eared Marmosets (*Hapale penicillata*) from South-east Brazil, presented by Mr. F. M. Still; a Guinea Baboon (*Cynocephalus sphinx*, ♀) from West Africa, presented by Mr. J. Huxley; a Black-backed Jackal (*Canis mesomelas*), four Bristly Ground Squirrels (*Xerus setosus*), a Vulturine Eagle (*Aquila verreauxi*, juv.), two Hispid Lizards (*Agama hispida*), four Delalande's Lizards (*Nucras delalandii*), seven Rufescent Snakes (*Leptodira hotambaeia*), four Crossed Snakes (*Psammophis crucifer*), five Rhomb-marked Snakes (*Trimerorhinus rhombeatus*), eight Rough-keeled Snakes (*Dasypeltis scabra*), an Infernal Snake (*Boodon infernalis*), two Puff Adders (*Bitis arietans*) from South Africa, presented by Mr. J. E. Matcham; a Fulmar (*Fulmarus glacialis*) from Iceland, presented by Mr. G. S. Hett; a Lapwing (*Vanellus cristatus*), British, presented by the Rev. A. Barham Hutton; a Herring Gull (*Larus argentatus*), British, presented by Mr. J. L. Bell; two Common Chameleons *Chamaeleon vulgaris*) from North Africa, presented by Mr. Ronald H. Archer; a Common Viper (*Vipera berus*), British, presented by Mr. P. Debell Tuckett; a Kinkajou (*Cercoleptes caudivolvulus*) from South America, an Arctic Fox (*Canis lagopus*) from Finland, a Palm Squirrel (*Sciurus palmarum*, albino) from India, a Black-headed Conure (*Conurus nanday*) from Paraguay, deposited.

OUR ASTRONOMICAL COLUMN.

HOLMES' COMET 1899 *d* (1892 III.).—

Ephemeris for 12h. Greenwich Mean Time.

1899.		R.A.			Decl.			Br.	
		h.	m.	s.	°	′	″	r^{-2}	$(r\Delta)^{-2}$
Sept.	21	3	9	35 98	+44	45	19·7	0·1758	0·05727
	22		9	31·29	44	57	20·3		
	23		9	24·28	45	9	10·2		
	24		9	14·91	45	20	49·1		
	25		9	3·18	45	32	16·4	0·1740	0·05809
	26		8	49·09	45	43	31·8		
	27		8	32·62	45	54	34·8		
	28		8	13·75	46	5	25·0		
	29		7	52·50	46	16	2·0	0·1721	0·05881
	30		7	28·86	46	26	25·1		
Oct.	1		7	2·85	46	36	34·1		
	2		6	34·46	46	46	28 2		
	3	3	6	3·71	+46	56	7·2	0·1702	0·05939

NEW SPECTROSCOPIC MULTIPLE STAR.—The San Francisco correspondent of the *Standard* (September 11) reports that Prof. W. W. Campbell, of the Lick Observatory, announces that he has obtained spectroscopic evidence that the North Pole star, Polaris, is in reality a system consisting of three bodies. Two of these revolve round each other in a period of *four* days, and simultaneously they together revolve around a third body, in the same manner as the earth and planets revolve round the sun. It is improbable that any of these distant bodies will ever be visible separately, their distance from each other being so small that it can only be detected by the change in wave-length of the lines in the spectrum of the system, owing to the continual approach and recession of each component during their mutual revolutions.

SOUTHERN VARIABLE STARS.—In the *Astronomical Journal* (No. 468), Mr. R. T. A. Innes gives the results of observations on variable stars made at the Cape Observatory since 1896. The working catalogue was mainly derived from lists supplied by Prof. J. C. Kapteyn, who noted all suspected cases of variability in the course of his work on the *Cape Photographic Durchmusterung*. The present communication considers twenty-seven stars, of which one is probably of the Algol type. The period of this is found to be 12·906 days, and consequently this star is conspicuous as being the longest period Algol variable. Its position is

$$\left.\begin{array}{l}\text{R.A. 7h. 42m. 41·1s.}\\ \text{Decl.} - 41^\circ\ 4'{\cdot}0\end{array}\right\}(1875)$$

The visual variation of magnitude is from 9·5 to 10·7, and photographically from 9·3 to 10·2.

THE *Bulletin de la Société Astr. de France* for September contains several interesting papers.—"Photography of stellar spectra," by Prof. A. Cornu, consists of a short description of the methods and results of researches into stellar constitution. MM. Flammarion and Antoniadi describe their most recent observations of Mars, including illustrations showing the land-